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ABSTRACT

This paper presents a study of the effects of "typical" infant day care on children's behavior and development. The variables studied include center versus home programs, length of time in day care, age of child and sex of child. Subjects for the study were 114 boys and girls (ranging in age from 12 to 36 months) enrolled in either a day care center or one of eight day care homes. All nine programs were described as providing a safe, pleasant and stimulating environment rather than as being oriented toward enrichment or education. Subjects were rated by an adult responsible for their care every six months over a period of 1 1/2 years on a battery of 12 developmental and temperamental tasks. Some of the results include the following: (1) center care children, especially those who had been in the program from four to six quarters, were superior in motor development and on one cognitive variable to children in home programs; (2) home care children were found to be more compliant and likeable than center children; (3) for all children, attention-curiosity, perseverance and activity scores increased as a function of time in day care; (4) no scores declined as a function of length of time in day care; (5) no sex differences were found. Possible interpretations of these and other results are discussed. (BD)

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Infant Day Care: Some Research Findings

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Abstract

Positive findings that have been reported for infant day care in center-based enrichment programs were extended to infant day care without formal educational curricula. Boys and girls ages 12 to 36 months, black and white, working and middle class, in home and center day care, were rated by their caretakers on items measuring 12 developmental and temperamental variables. Sex X Age X Location, Location X Term in Day Care, and Repeated Measures X Term in Day Care analyses of variance were performed. No sex main effects were found. Center Care children, especially those labelled Long Term, were superior in motor development and on one cognitive variable. Home Care children were found to be more compliant and likeable. For all children, Attention-Curiosity, Perseverance, and Activity scores increased as a function of length of time in day care. None of the variable scores declined with time in day care. Discussion concerned possible explanations for the findings, the appropriate control group, and developmental expectations for infants in day care.

Infant Day Care: Some Research Findings

Opponents of day care for children, particularly children below three years of age, believe that day care is harmful to children's development of attachment with their mothers and to the development of intellectual ability. The opponents often cite the reports of Bowlby (1953) and Spitz (1945) which describe the negative effects of institutionalization on infants. The use of these reports in support of their opposition to day care is questionable, however. Modern day care, in most instances, does not replicate the extremely barren, understaffed institutions that lead to the infant sufferage reported by Bowlby and Spitz. In addition, children in day care maintain daily contact with their parents, before and after the parents' work.

Recent studies more directly relevant to assessing the effects of infant day care (birth to three years) have suggested that it is not harmful to the mother-child relationship (Caldwell, Wright, Honing, & Tannenbaum, 1970; Cornelius & Denny, 1975; Doyle, 1975; Kagan, Kearsley, & Zelaso, Note 1; Ragozin, Note 2), to the child's intellectual development (Caldwell & Richmond, 1968; Caldwell et al., 1970; Doyle, 1975; Macrae & Herbert-Jackson, 1976; Robinson & Robinson, 1973; Kagan et al., Note 1; Final Report, Note 3; Larson, Note 4), or to the child's social-emotional development (Braun & Caldwell, 1973; Macrae & Herbert-Jackson, 1976; Schwarz, Krolick, & Strickland, 1973; Kagan et al., Note 1; Final Report, Note 3; Lippman & Grote, Note 5). The most recent and comprehensive report on the effects of infant day care concluded that few differences were observed between day care and home care children in cognitive functioning, language, attachment behavior, separation protest, and tempo

of play (Kagan et al., Note 1). That report concluded that in general the home environment from which the day care child comes is more influential on the child's early development than is the day care experience. Robinson and Robinson (1973) concluded that there were more positive effects of the day care experience for disadvantaged than for advantaged children.

There are at least two exceptions to this recent and positive data on the effects of day care. Schwarz, Strickland, and Krolick (Note 6) reported that between the ages of 3 and 4 years, children who had been in day care for 24 to 27 months were described as less cooperative, more physically and verbally aggressive with peers and adults, and more likely to run about than children who had had no regular day care until 4 months before the testing. However, they also reported no differences between the groups in ability to get along with peers, spontaneity, or intellectual competence.

Blehar (1974) reported that 2- and 3-year-olds attending full-time group day care showed more disturbances in the mother-child relationships than did comparable home-reared children. Her conclusions were based upon observations of reunions with mothers after their children had been in a strange situation (a staged laboratory condition). The children who started day care at age 2 showed avoidance behavior upon reunion with mother whereas those children who started day care at 3 years showed anxious, ambivalent behavior.

While the studies reviewed here seem to indicate more positive than negative effects for infant day care, there are several characteristics of these studies that limit their generalizability. First, in many of the studies, the greater number of children were middle class (Blehar, 1974;

Cornelius & Denny, 1975; Kagan et al., Note 1; Ragozin, Note 2; Final Report, Note 3), or at least not economically deprived (Macrae & Herbert-Jackson, 1976; Robinson & Robinson, 1971). Only in the studies using the Children's Center sample in Syracuse (Braun & Caldwell, 1973; Caldwell et al., 1970; Caldwell & Richmond, 1968; Schwarz et al., 1973), and in the studies of Doyle (1975) and Lippman and Grote (Note 5) were the samples described as poorly educated and less privileged. The positive findings reported for infant day care may not be as evident among children from lower income families.

Second, most of the data which indicated no harmful effects of day care were obtained from center-based programs which were of high quality in terms of curriculum. The programs were often labelled enrichment programs. There was generally a research component to the programs and an intent to measure the effects of day care from the inception of the program.

Third, the length of time in and the age of entry into day care were also not obvious independent variables in most of the studies reviewed here. Interestingly, exceptions to this generalization are the studies of Blehar (1974) and Schwarz et al. (Note 6) which reported negative effects of infant day care. Braun and Caldwell (1973), Macrae and Herbert-Jackson (1976), and Larson (Note 2), all of whom reported positive findings, also controlled for age of entry and/or length of time in day care.

The present study of the effects of infant day care on children's general development and certain temperamental variables controlled for and included variables that would permit greater generalization of the results to more typical infant day care. The programs studied were

located in homes and in a center and were without formal educational curricula. The philosophies of the programs were oriented toward providing safe, pleasant, and stimulating environments. The staff were described as being aware of the individual needs and development of each infant. The children were from predominantly working class homes. Length of time in day care and age at the time of entry were variables controlled in determining the effects of infant day care.

Method

Subjects. The findings reported here are based on ratings of the development and temperament of 114 boys and girls between the ages of 12 and 36 months. Forty-one percent of the total sample was located in homes while 59% of the children was in center care. Twenty-one of the home care children were female; 26 were male. Thirty of the center care children were female; 37 were male. Eighty-one percent of the home care children were working class and 19% were middle class. In center care, 65% of the children were working class and 35%, middle class.

Social class of the child's parents was determined according to the classification scheme of Blau and Duncan (1967). Codes of 0-49 were considered working class while codes of 50 or more were considered middle class.

The center day care program was located in a spacious, pleasant center in a church. The home day care program consisted of 8 family homes of varying size and resources that were organized through a day care center for older children. Placement in the center or home was routed through a community child-care coordinating council.

Children were assigned to the home or center day care program on the

basis of one or more of the following variables: transportation, convenience, openings, age, and income. The home care program had access to more funds to subsidize care. Consequently that program had a higher percentage of working class parents than does the center program.

Procedure. Every six months, over a year and one-half period, all children in the two day care programs were rated by an adult responsible for their care on an inventory of items measuring four developmental variables and eight temperamental variables. The inventory was adapted from two earlier inventories. Items measuring Gross Motor and Fine Motor development, and Comprehensive-Conceptual and Expressive Language development were taken from an inventory developed by Ireton and Thwing (1972). Examples of items are: stands without support, crawls upstairs, transfers objects from hand to hand, puts small object in cup, associates sounds with things, knows names of playmates, follows simple instructions, and refers to own things as "my" or "mine." The rater indicated the presence or absence of a particular behavior noted in the inventory.

Items measuring the temperamental variables of Activity, Attention-Curiosity, Likeability, Withdrawal, Irritability-Tension, Tension-Anxiety, Compliance, and Perseverance were taken from a behavior characteristics form designed by Borgatta and Fanshel (1970). Examples of items included: is alert, cries easily, is restless, and is easy to take care. The items were rated on a 4-point scale ranging from Rarely to Almost Always.

Separate forms of the inventory were developed for each age group, i.e., Form 2 (12 to 24 months) and Form 3 (24 to 36 months). The items measuring the temperamental variables were the same for both forms, but the developmental items were age specific. Because the item content, the

number of items, and the ceilings for the developmental variables were different for each form, it was not possible to compare the raw scores across forms. In order to pool the developmental data across forms for the data analyses, the raw scores were rescored in the following way.

According to Ireton and Thwing (1972), for each chronological age, there is an expected score for each developmental variable. Thus, for each child the obtained score was compared with the expected score for the chronological age. If the child's obtained score was equal to, greater than, or not more than one month less than the expected score, the child's score was rescored as 3. If the obtained score was 2 or 3 months below the expected score, the score was rescored as 2. If the obtained score was 4 or more months below the expected score, the score was rescored as 1.

Because of missing ratings many of the analyses were based on an N of less than 114. Stringent criteria were maintained for determining a child's score for a variable. For instance, if the scores for 4 items were to be summed to obtain a variable score, and the rating for one of the items was missing, no score was determined for that variable. If 14% or more of the items making up a variable were not rated for a child, then no score for that variable was determined.

Results

Reliability. Inter-rater reliability of the ratings was determined for a subsample of 35 children. Two teachers rated each child on all of the items measuring the 12 variables. For each child, the 12 variable scores derived from each rater were used to calculate a product-moment correlation as an index of the extent of agreement between the ratings of

the two raters. Five sets of raters rated 5, 6, or 13 children. The average correlations for the five sets of ratings ranged between .87 and .93.

Test reliability was not determined because the variable items were taken directly from inventories with published test reliability coefficients. For the developmental variables, split-half reliability coefficients, corrected for full-length, computed for the developmental variables for ages 12 - 36 months ranged as follows: Gross Motor, .65 to .80; Fine Motor, .40 to .80; Expressive Language, .81 to .91; and Comprehensive-Conceptual, .89 to .90 (Ireton & Thwing, 1972). Alpha coefficients computed for the temperamental variables ranged from .78 to .88 (Borgatta & Fanshel, 1970).

Sex X Age X Location Analyses. The scores for the 12 variables were separately subjected to a Sex X Age X Location analysis of variance. There were two age groups, 12 - 24 months, and 24 - 36 months.

A summary of the significant findings for these 12 analyses may be found in Table 1. No sex main effects appeared for any of the variables.

Insert Table 1 about here

Older children were found to have a higher mean Attention-Curiosity score (9.7 vs. 8.5, range 3-12) and lower mean Compliance score (8.8 vs. 9.8, range 4-12) than younger children. The Mean Perseverance score was higher for older than for younger children (5.6 vs. 4.3, range 2-8). However, this age effect appeared to be a function of both location and sex. Older boys in home care had the highest mean perseverance score (6.2) while younger girls in the center had the lowest mean score (4.0).

Center children were found to have a higher mean Fine Motor score (2.8 vs. 2.6, range 1-3) than home care children, but were rated lower on Compliance (9.0 vs.9.8, range 4-12) and Likeability (21.4 vs. 24.3, range 9-28).

Sex X Age and Sex X Location interaction effects were found for the Gross Motor scale. Older boys had a higher mean Gross Motor score than older girls (2.9 vs. 2.6, range 1-3) but younger girls had a higher mean score than younger boys (2.9 vs. 2.5). In addition, boys in center care, regardless of age, had a higher mean Gross Motor score than boys in home care (2.9 vs. 2.5).

Location X Term Analyses. The numbers of quarters that each child was in day care at the time of initial testing was recorded. Those children who had been in day care for three quarters or less were classified as Short Term; those children who had been in day care for four to six quarters were classified as Long Term.

In order to determine if the location effects were related to the number of quarters in day care at the time of testing, the scores for each of the 12 variables were subjected to a Location X Term analysis of variance. Scores for seven children, all in Center Care, were not included in the analyses because they had been in day care for variable periods of time considerably longer than those of the rest of the children. A summary of the significant findings is presented in Table 2.

Insert Table 2 about here

Significant location main effects were found for Compliance and

Likeability, confirming the findings in the Sex X Age X Location analyses that Home Care children are more compliant and likeable than Center Care children. Center Care children also tended to have higher Fine Motor scores (p = .06), a finding reported earlier.

For Gross Motor development, there was a significant location main effect as well as a location X term effect. Short Term children, regardless of location, had about the same Gross Motor scores, but the Long Term Center Care children had higher scores than did the Long Term Home Care children (3.0 vs. 2.4, range 1-3).

There was also a significant interaction effect for the Comprehensive-Conceptual variable. Time in Home Care did not differentially effect the Comprehensive-Conceptual scores. However, Long Term children in Center Care had higher Comprehensive-Conceptual scores (2.9 vs. 2.5, range 1-3) than Short Term children in Center Care, t (58) = 1.91, p = .05. The Long Term Center Care children also tended to have higher Comprehensive-Conceptual scores than Long Term Home Care children (p = .06).

Time-in-Day Care effects for Activity and Attention-Curiosity were also found. Regardless of location, Long Term children had higher Activity scores (6.8 vs. 5.8, range 2-8) and higher Attention-Curiosity scores (10.0 vs. 8.2, range 3-12) than did Short Term children.

Repeated Measures Analyses. The variable scores for 30 children for whom two sets of scores at a six-month interval were available were separately subjected to a repeated measure analysis of variance. The number of quarters in day care at the time the scores were obtained was a second independent variable. For three of the dependent variables, there were significant main effects. For Fine Motor development,

regardless of the number of quarters in day care, there was an increase in developmental status from the time the first score was obtained to the time the second score was obtained six months later, $F(1,25) = 8.95$, $p = .01$. The mean score increased from 2.4 to 2.8, range 1-3. The effect accounted for 9.17% of the variance. This increase does not represent an age change. The developmental scores are corrected for age. Thus, the change represents a higher level of development at the second measurement than at the first measurement.

For Expressive Language, there was a repeated measures effect, $F(1,27) = 7.94$, $p = .01$. Six months after the first testing, the mean score went from 2.1 to 2.6 (range 1-3). The effect accounted for 9.4% of the variance. There also was a time-of-rating effect for Perseverance, $F(1,28) = 7.96$, $p = .01$. The effect accounted for 12.6% of the variance. Perseverance scores increased from 3.8 to 5.1, range 2-8.

Discussion

For four variables, Tension-Anxiety, Irritability-Tension, Withdrawal, and Expressive Language, location and amount of time in day care did not have any significant effects on the behavior of children in infant day care. For the remaining variables, there were some significant findings, but there was no general pattern of effects of location and amount of time spent in day care. The scores on variables measuring infant developmental status and temperament did, however, tend to remain stable or to increase in magnitude as a function of time in day care.

For both Fine Motor and Gross Motor development, high developmental status was more likely to occur among the Center Care children than among the Home Care children. The center location seemed to me to offer more

opportunities in the form of equipment and space for practicing motor skills. Even on wintery days, the children had a large gymnasium where they could run and ride tricycles. In most of the home locations, the children's play area indoors was limited to a carpeted living and/or dining room. The caretakers in the homes may not even have had the opportunity to observe much gross motor behavior.

The Center Care children also had a slight advantage on the Comprehensive-Conceptual variable. Length of time in day care had a significant positive effect on the Center Care children's scores, but had no effect on the Home Care children's scores. Although the Short Term Home Care children had significantly higher Comprehensive-Conceptual scores than the Short Term Center Care children, Long Term Center Care children had significantly higher scores than Long Term Home Care children. I believe that there is evidence forthcoming in an observation study of the caretakers' actions and reactions toward the children in the two day care settings that will provide an explanation for this finding. My general impression of that observation data is not so much a lack of stimulating verbal interchanges in the Home Care locations, but a lack of a variety of games, toys, and equipment for stimulating the conceptual development of the children. The homes did not seem to offer a physical environment or equipment conducive to active exploration and creative free play.

It was found that Attention-Curiosity, Perseverance, and Activity scores increased with length of time in day care. During this age span, it is expected that children's scores on these variables would increase. The data from this study suggests that infant day care does not effect

the development of these variables negatively.

Although Center Care children seemed to have an advantage in motor development as well as in Comprehension-Conceptual ability, they had lower Compliance and Likeability scores than did Home Care children. Schwarz et al. (Note 6) found that day care children in general were more uncooperative than children who had had no day care. Where the advantage lies depends upon one's value judgment about compliance and related likeability. Actually the Center Care children who had a mean Compliance score of 8.8 on a scale ranging from 3 to 12 did not lack a significant degree of compliance; they just had significantly lower scores than did the Home Care children who had a mean Compliance score of 9.8. The Center Care children had a mean likeability score of 21.8 and the Home Care children, 24.2 on a scale ranging from 2-28. Again, they were not considered unlikeable children, just less likeable than Home Care children.

The groups of children are smaller in the Home Care location so that it may be easier to insure control and promote self control. The caretakers in homes also seemed to expect more compliance from their children. Analyses of the observation data referred to earlier should offer data to confirm or deny this impression.

It was gratifying to find a lack of sex differences for any of the developmental or temperamental variables in this study. Cornelius and Denny (1975) found no sex differences among day care children on measures of the children's relationships with their mothers. They suggested that children in day care were less sex-typed and behaved in less traditional sex roles. Preliminary analyses of our observations also indicated no differences in adult behavior toward boys and girls.

It has been difficult for some to view objectively the limited data which indicates a lack of negative effects of day care on young children. Some refuse to consider data which contradicts what they consider to be the natural role of a mother--being in the home--and what they consider to be the most stimulating environment for the optimal growth of the child. Data has been accumulating to indicate that good day care is not harmful to child development, at least in the short run.

Many who have endorsed day care as a viable childrearing alternative for children of working parents are still somewhat tentative in their endorsements. They emphasized that the positive findings for day care are based upon the results of quality day care. I agree that we can not expect the same results from poor day care. Yet the problem of distinguishing the essential ingredients of good day care has not yet been attacked. Favorable results reported for day care have generally come from studies of programs that may be considered enrichment programs. The resources for these programs are often greater than those resources of the typical day care center or home used by the majority of working parents. The resources of enrichment programs are possibly greater than those resources for any child's own home, regardless of income.

The present research studied infant day care under circumstances more typical of many situations in our country. And it was found that the young children's developmental status, motorically, cognitively, and temperamentally, did not decrease with time in day care. For some variables, the developmental status actually increased. I believe that ground is becoming firmer for stating that day care under reasonably supportive conditions does not delay infant development.

Some might say that this study should have included a control group of home-reared infants to determine if there are any effects of day care. I argue that each child in day care is his/her own control. How a child develops in relation to home-reared children is irrelevant. Children in day care most likely do develop somewhat differently than home-reared children. But who is to say that the characteristics of home-reared children and the rate at which they develop provide the norm, or are superior?

I do not believe that we should expect more from children than they bring into the day care experience. Most day care is not meant to be an intervention or enrichment program. It is meant to provide a supportive, safe, and stimulating environment for the child while parents work. We should not expect the child in day care to fall behind in development. Neither should we necessarily expect the child's development to surpass that expected in the normal course of events for that child, unless the child is enrolled in a specific enrichment or intervention program.

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Table 1

Significant Sex X Age X Location Analyses of Variance of Infant Development and Temperament Variables

Variable	Source	F	df
Gross Motor	Sex X Age	6.29*	1,95
	Sex X Location	4.77*	1,95
Fine Motor	Location	4.66*	1,95
Expressive Language	Sex X Age X Location	4.68*	1,98
Attention-Curiosity	Age	4.80*	1,79
Compliance	Age	4.47*	1,97
	Location	5.09*	1,97
Likeability	Location	8.17**	1,81
Perseverance	Age	14.52***	1,99
	Sex X Age X Location	5.11*	1,99

*$p < .05$

**$p < .01$

***$p < .00$

Table 2

Significant Location X Term in Day Care Analyses of Variance of Infant Development and Temperament Variables

Variable	Source	F	df
Gross Motor	Location	4.60*	1,99
	Interaction	5.21*	1,99
Comprehensive-Conceptual	Interaction	4.94*	1,102
Activity	Term	5.26*	1,102
Attention-Curiosity	Term	11.13**	1,83
Compliance	Location	4.83*	1,101
Likeability	Location	6.10*	1,85

*$p < .05$

**$p < .01$